

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU2004/001435

| | | |
|---|--|-----------------------|
| A. CLASSIFICATION OF SUBJECT MATTER | | |
| Int. Cl. 7: G08B 17/00, 17/10, 17/103, 17/107 | | |
| According to International Patent Classification (IPC) or to both national classification and IPC | | |
| B. FIELDS SEARCHED | | |
| Minimum documentation searched (classification system followed by classification symbols) | | |
| Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched | | |
| Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) | | |
| WPAT: IPC marks + Keywords: SMOKE, DETECT+, FIRE, SENS+, DUST, PARTICLE?, ALARM, WAVELENGTH? FREQUENC+, COLO?R, INFRA RED, IR. | | |
| ESPACE: SMOKE, DETECTOR, COMPUTER, LENS | | |
| C. DOCUMENTS CONSIDERED TO BE RELEVANT | | |
| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
| X | WO 2001/059737 A (COLE) 16 August 2001 | |
| Y | Entire document | 1-16, 22, 44, 46-49 |
| | Entire document | 33, 45 |
| Y | US 4181439 A (TRESCH et al) 1 January 1980 | |
| | Entire document, see column 4 lines 61-66, column 6, drawings | 33 |
| Y | US 6414746 B (STETTNER et al.) 2 July 2002 | |
| | Entire document, see abstract, drawings | 45 |
| <input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex | | |
| * Special categories of cited documents: | | |
| "A" document defining the general state of the art which is not considered to be of particular relevance | "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention | |
| "E" earlier application or patent but published on or after the international filing date | "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone | |
| "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) | "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art | |
| "O" document referring to an oral disclosure, use, exhibition or other means | "&" document member of the same patent family | |
| "P" document published prior to the international filing date but later than the priority date claimed | | |
| Date of the actual completion of the international search | Date of mailing of the international search report | |
| 21 December 2004 | 6 JAN 2005 | |
| Name and mailing address of the ISA/AU | Authorized officer | |
| AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustalia.gov.au Facsimile No. (02) 6285 3929 | CHARLES BERKO Telephone No : (02) 6283 2169 | |

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU2004/001435

| C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT | | |
|---|---|-----------------------|
| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
| Y | US 2002/0101345 A (PATTOK et al) 1 August 2002 Entire document | 45 |
| X | WO 2000/007161 A (RUNCIMAN) 10 February 2000 Entire document | 1-16, 46-49 |
| Y | Entire document | 22, 44 |
| X | GB 2319604 A (KIDDE FIRE PROTECTION LIMITED) 27 May 1998 Entire document | 1-16, 46-49 |
| Y | Entire document | 22, 44 |
| X | US 3982130 A (TRUMBLE) 21 September 1976 Entire document | 1-16, 46-49 |
| X | GB 2273769 A (ELLWOOD et al) 29 June 1994 Entire document | 1-16, 46-49 |
| Y | US 4426640 A (BECCONSALL et al) 17 January 1984 Entire document | 1-16, 22, 44, 46-49 |
| Y | GB 2193570 A (THE SECRETARY OF STATE FOR DEFENCE) 10 February 1988 Entire document | 1-16, 22, 44, 46-49 |
| Y | US 4906978 A (BEST et al) 6 March 1990 Entire document | 1-16, 22, 44, 46-49 |
| Y | GB 2267963 A (APPLEBY et al) 22 December 1993 Entire document | 1-16, 22, 44, 46-49 |

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU2004/001435**Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 23.
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

No meaningful construction can be placed on the claim
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a)

Box No. III Observations where unity of invention is lacking (Continuation of Item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

See Supplemental Box sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-16, 22, 33, 44, 45, and 46-49

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

Supplemental Box

(To be used when the space in any of Boxes I to VIII is not sufficient)

Continuation of Box No: III

The multiple inventions found in the application are as follows:

Group 1.

(a) Claims 1-16, and 46-49, are directed to determination of the presence of particles of predetermined size(s) in a fluid sample. The former subgroup being characterised by responsiveness to a signal(s) sample and illumination by first and second wavelengths of light, while the latter is/are characterised by responsiveness to a logarithmic scaled signal exemplified in appended claims by an alarm.

(b) Claim 22, is directed to determination of a service interval for a particle monitor, is/are characterised by determination of the presence of dust particle(s) distinctly from smoke particles, and measure of the presence thereof, and providing indication when a predetermined threshold is reached.

(c) Claim 33, directed "In combination" to a biconvex lens with the monitor of claim 15, 21 or 32.

(d) Claim 44, directed to an apparatus to detect particles is characterised by a processor adapted to operate in accordance with a set of instructions, and adapted to perform the method of anyone of claims 1-14.

(e) Claim 45, directed to a computer program product, is characterised by a usable medium having readable program and system codes for detecting the presence of particles in accordance with anyone of claims 1-14 in association with a data processing system. *For the purpose of this report, this appended claim has been added to this group. However, a separate search would be required for completeness.*

Thus, what these sets of claims have in common is **determination of the presence of particles, and some indication thereof**. This is considered to constitute a "first" special technical feature.

Group 2. Claims 17-21, directed to a gain control apparatus adapted for providing particle monitor control, is/are characterised by **first and second gain stage amplifiers such that amplifier frequency response is unaffected by controlled feedback**.

This is considered to constitute a "second" special technical feature.

Group 3. Claims 24-31 directed to a particle monitoring chamber is/are characterised by a **primary iris preventing light impinging directly on a lens adapted to focus light toward a receiver cell**.

This is considered to constitute a "third" special technical feature.

Group 4. Claims 34-38, directed to determination of velocity of fluid flowing through a given area, is characterised by **sensor paths of substantially similar temperature characteristics, and the determination based on measure of cooling effect of fluid passing the sensors**.

This is considered to constitute a "fourth" special technical feature.

Group 5. Claims 39-43 directed to mounting a housing on a duct, is/are characterised by a **tab element, shaped to fit the profile of the duct near the mounting area, and used to attach the housing**.

This is considered to constitute a "fifth" special technical feature.

None of these sets of claims have any special technical features in common as required by Rule 13.2. The claimed invention lacks unity.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/AU2004/001435

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

| Patent Document Cited in Search Report | | | Patent Family Member | | | | |
|---|------------|------|----------------------|----|---------|----|------------|
| WO | 0159737 | AU | 31426/01 | EP | 1261953 | US | 2003011770 |
| US | 4181439 | AU | 23207/77 | BE | 852827 | CA | 1096461 |
| | | CH | 592932 | CH | 615288 | DE | 2619082 |
| | | DE | 2705263 | FR | 2357888 | GB | 1533192 |
| | | JP | 52119975 | NL | 7702835 | SE | 7703071 |
| US | 6414746 | NONE | | | | | |
| US | 2002101345 | US | 6469623 | | | | |
| WO | 0007161 | AU | 52564/99 | CA | 2339170 | EP | 1101210 |
| | | ZA | 200101433 | | | | |
| GB | 2319604 | GB | 2319605 | | | | |
| US | 3982130 | NONE | | | | | |
| GB | 2273769 | NONE | | | | | |
| US | 4426640 | AU | 61839/80 | EP | 0026046 | JP | 56049940 |
| GB | 2193570 | NONE | | | | | |
| US | 4906978 | NONE | | | | | |
| GB | 2267963 | NONE | | | | | |
| Due to data integration issues this family listing may not include 10 digit Australian applications filed since May 2001. | | | | | | | |
| END OF ANNEX | | | | | | | |